

Ecosystem processes in Suisun Marsh: developing understanding for restoration and management

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Public Comments

No public comments were received for this proposal.

Technical Synthesis Panel Review

Proposal Title

#0161: Ecosystem processes in Suisun Marsh: developing understanding for restoration and management

Final Panel Rating
inadequate

Technical Synthesis Panel (Primary) Review

TSP Primary Reviewer's Evaluation Summary And Rating:

The proposal suffers from trying to do too much and not focusing on any one segment. While there will be some very valuable information here it does not seem to be worth the cost. Also question the study's focus on the hydrodynamics at the expense of the vegetated surface. It is hard to see how data will be interpreted from their limited data set relative to what happens on the marsh surface. There are better ways to reach their intended research goal than methods proposed here.

Additional Comments:

Given the length of this proposal lots of detail would be expected, but it was not. The PIs have taken the general approach that what happens in this area is hydrodynamically driven. Without a doubt that is important, but given the lack of information on fundamental processes on these wetlands the wetlands need more attention. Most of the data collections seem to be reasonable, but they look more like various parts thrown together, that may not all fit together in the end. This is a large, comprehensive, complex proposal. This may be one of its strengths as something will come from all of these data, but it is not clear that it will all go together and be useful in providing the information needed for restoration.

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Technical Synthesis Panel Review

More attention needed to have been given the vascular plant component.

The proposal suffers from trying to do too much and not focusing on any one segment. While there will be some very valuable information here it does not seem to be worth the cost. Also question the study's focus on the hydrodynamics at the expense of the vegetated surface. It is hard to see how data will be interpreted from their limited data set relative to what happens on the marsh surface. There are better ways to reach their intended research goal than methods proposed here.

Technical Synthesis Panel (Discussion) Review

TSP Observations, Findings And Recommendations:

The general idea of this proposal is laudable, however; the technical reviewers have identified a number of flaws in the methodology (some of which are significant concerns). The proposal also lacked necessary details regarding some significant elements, particularly regarding how the disparate components of the proposed study would be integrated into the study's final products.

Technical Review #1

proposal title: Ecosystem processes in Suisun Marsh: developing understanding for restoration and management

Review Form

Goals

Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the idea timely and important?

Comments	Goals: The goals of the study are to collect baseline information on hydrodynamics, sediment transport, organic matter, organic contaminants, benthic organisms, zooplankton and fish in channels of Suisun Marsh. General hypotheses are presented in the Executive Summary on page 1. Detailed hypotheses relating to the component studies are presented in the Project Description and start on page 8. (Score=3) Good
Rating	good

Justification

Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

Comments	Justification: The justification for the study (page 2) is "to develop an understanding of the processes that characterize Suisun Marsh to improve our ability to manage it for desirable species and to increase the likelihood that ongoing and present restoration efforts will be successful." While detailed hypotheses are presented, many of them are generalizations (for example, Hydrodynamics H1) or are not testable because of lack of replication of "treatments" (i.e. land use,
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Technical Review #1

	water management). (Score=3) Good
Rating	good

Approach

Is the approach well designed and appropriate for meeting the objectives of the project? Is the approach feasible? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology, or approaches? Will the information ultimately be useful to decision makers?

Comments	Approach: Sampling effort is focused almost entirely in the water column. It seems that not much thought has been given to the vegetated part of the marsh. This is a weakness since many of the processes that they hope to understand involve exchanges between the (vegetated) marsh and the water column. (Score=4) Fair
Rating	fair

Feasibility

Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives and within the grasp of authors?

Comments	Feasibility: The project is technically feasible. Many federal and state agencies and personnel are involved in the project. (Score=2) Very Good
Rating	very good

Monitoring

If applicable, is monitoring appropriately designed (pre-post comparisons; treatment-control comparisons)? Are there plans to interpret monitoring data or otherwise develop information?

Comments	Monitoring: There is plenty of monitoring in this proposal though the frequency probably should be more than 2X per year. Also,
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Technical Review #1

	collection of only three infauna samples per site and sampling date is insufficient to document differences among sampling locations and land uses. (Score=2) Very Good
Rating	very good

Products

Are products of value likely from the project? Are contributions to larger data management systems relevant and considered? Are interpretive (or interpretable) outcomes likely from the project?

Comments	Products: Deliverables include a hydrodynamic model that will simulate pre-settlement and present-day tides, velocities and salinities in the marsh. A hydrodynamic Atlas describing tides and current also will be produced. (Score=2) Very Good
Rating	very good

Additional Comments

Comments

Capabilities

What is the track record of authors in terms of past performance? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Comments	Capabilities: The PI's have the capabilities to successfully carry out the proposed work.(Score=2) Very Good
Rating	very good

Budget

Is the budget reasonable and adequate for the work proposed?

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Technical Review #1

Comments	Budget: The total budget is nearly 2.5 million USD. The PI's and their organizations will contribute an addition 1 million USD in leveraged funds. While many personnel are involved in the project, for this amount of money, I would like to see more frequent sampling than 2X per year. (Score=2) Very Good
Rating	very good

Overall

Provide a brief explanation of your summary rating.

Comments	Overall: Overall, I rate this project as Good. I would rate the proposal higher if the work extended beyond the water column and into the vegetated marsh.
Rating	good

Technical Review #2

proposal title: Ecosystem processes in Suisun Marsh: developing understanding for restoration and management

Review Form

Goals

Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the idea timely and important?

Comments	The stated goal of this research is to "develop an understanding of the Marsh's basic hydrologic, biochemical, geomorphological, and ecological processes". This goal seems to me far too broad and not achievable with only two sampling events at 9 sample stations in a 116,000 acre area, even if \$2.4 million were invested in it. Even the specific questions such as seasonal variation of water movement, effects of land use on water quality, hydrodynamics, and material transport, and sources of fates of organic and metal contaminants will be difficult or impossible to tackle in a 36 month project. Furthermore, these questions seem to not be clearly related to management or restoration goals. General hypotheses such as "Suisun Marsh is a major source of aquatic constituents," "ecosystem processes become more complex, diverse, and sustainable as channel order increases," and that unaltered waterways are more desirable than altered waterways are vague, not testable, and possibly biased. These problems also occur even for many of the specific hypotheses listed for particular sections.
Rating	fair

Technical Review #2

Justification

Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

Comments	<p>The total proposal is 182 pages long, and the text is 35 pages long (my information says the limit is 20 pages for the text). A table of contents would have helped. However, justification is limited to 2 short paragraphs (pp. 32-33). The text says that the project elements are directed toward the CALFED goals of management of at risk and harvestable species, restoration of natural processes and habitats, reducing impacts of invasive species, and improving water and sediment quality. Unfortunately, at risk and invasive species are not addressed in the methods, and vegetation studies are not even mentioned in the proposal (necessary for habitat restoration). Some information on harvestable species and water quality may be obtained in the proposed research, but the value of these findings will be limited given they will only be from two sample events. Therefore, the proposed research seems only peripherally related to CALFED's goals. Other justification presented is that a workshop suggested that field data be collected in Suisun Marsh and that the area has been largely ignored. This is likely true, but I would submit that collecting a lot of data on one or two leading issues or concerns is superior to collecting a little data on many different concerns. For example, if contaminants are the main concern about Suisun marsh, focus the proposal entirely on that and do an outstanding job on it.</p>
Rating	poor

Approach

Is the approach well designed and appropriate for meeting the objectives of the project? Is the approach feasible? Are results likely to add to the base of knowledge? Is the project likely to

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Technical Review #2

generate novel information, methodology, or approaches? Will the information ultimately be useful to decision makers?

Comments	Numerous methodologies are proposed, and these seem to be well thought through and generally accepted as valid sampling or measurement techniques. Again, however, the study seems far too broad to provide a meaningful assessment of any given aspect of the marsh. Additionally, the complete omission of vegetation structure and role in ecosystem processes seems inappropriate. Vegetation is one of the most important components of marsh ecosystems. I do not know if non-native species such as <i>Spartina alterniflora</i> and its hybrids with <i>Spartina foliosa</i> are a concern in Suisun marsh, but this to me would seem to be an obvious study objective if they are.
Rating	fair

Feasibility

Is the approach fully documented and technically feasible? What is the likelihood of success?
Is the scale of the project consistent with the objectives and within the grasp of authors?

Comments	The project methods as outlined seem feasible. However, adequately answering the stated research questions and testing all of the stated hypotheses is not (see previous comments).
Rating	fair

Monitoring

If applicable, is monitoring appropriately designed (pre–post comparisons; treatment–control comparisons)? Are there plans to interpret monitoring data or otherwise develop information?

Comments	Monitoring is the primary aspect of this project, and sampling techniques are described in great detail. However, very little is mentioned about how the data will be analyzed (e.g., statistical analyses). Given
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Technical Review #2

	the volume of data that would result from this research, that is a major omission.
Rating	fair

Products

Are products of value likely from the project? Are contributions to larger data management systems relevant and considered? Are interpretive (or interpretable) outcomes likely from the project?

Comments	The major products that will be of value to CALFED are development of a model that simulates pre- and post-settlement hydrologic conditions in the marsh and a hydrodynamic atlas. There seems to be no product that includes assessment of variables other than hydrology, except for the raw data, a final report, peer-reviewed publications, and presentations. It is not clear how the findings will improve management or restoration of Suisun Marsh.
Rating	fair

Additional Comments

Comments	Far too long!
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Capabilities

What is the track record of authors in terms of past performance? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Comments	Culberson is listed as the proposal applicant, but it doesn't become clear that Moyle is the lead investigator until the personnel section (p. 62). None of the PIs or their specific responsibilities for the project are described in the text of the proposal, other than a list of other funding that some of the PIs have (Table 1). The individual team members seem to have expertise and experience in various areas
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Technical Review #2

	related to the proposed project, but individual responsibilities and interactions between PIs are not clearly spelled out in the text.
Rating	fair

Budget

Is the budget reasonable and adequate for the work proposed?

Comments	The budget is 45 pages long! It should a quarter of that at most. In any case, \$2.4 million seems like too much for two sample events at 9 different sampling stations, even if a lot of measurements are made at each one.
Rating	poor

Overall

Provide a brief explanation of your summary rating.

Comments	Obviously a lot of work went into this proposal, and many of the proposed methods could provide interesting and relevant findings if implemented in a more concentrated manner for a longer period of time. The proposal needs much streamlining and more input from CALFED as to what information is really needed about the Suisun Marsh to effectively manage or restore it.
Rating	fair

Technical Review #3

proposal title: Ecosystem processes in Suisun Marsh: developing understanding for restoration and management

Review Form

Goals

Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the idea timely and important?

Comments	<p>This proposal presents a very ambitious project with broad goals covering hydrologic, biochemical, geomorphological, and ecological processes. Specifically, the project seeks to address the hydrodynamics of the tidal creek-slough-bay system, sediment transport within these channels, exchanges and production of organic matter within the system, contaminants in the system, benthic interactions, and interactions with zooplankton and fish in the water column. Consequently, a somewhat complex field observation program is planned. In addition, an existing numerical model will be modified or adapted and will be used to integrate components (hydrodynamic) of the study.</p> <p>The project is divided into seven elements (and data integration added as an eighth) that address what the investigators consider the critical issues for developing an ecological understanding of the Suisun marsh system. Each element has a background and review of present understandings of the system, a series of hypotheses to be tested, and the observations and methods that will be used to address the goals of the study. In a number of the descriptions of the project elements, a discussion is also presented concerning how the results will be combined with the other elements, as well as previous and other ongoing studies, to address the hypotheses being tested. Each</p>
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Technical Review #3

	of these descriptions is well presented and justifies that component of the project. In this sense, the goals, objectives, and hypotheses are clearly stated and consistent. In addition, the proposal justifies the timeliness and importance of the work.
Rating	excellent

Justification

Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

Comments	In my view, the proposal satisfactorily shows the importance of the work and the relationship to the needs of San Francisco Bay and the CALFED program. Each component of the study is well justified and presents a convincing argument (as stated in the 2nd paragraph of the response to "Goals" above).
Rating	excellent

Approach

Is the approach well designed and appropriate for meeting the objectives of the project? Is the approach feasible? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology, or approaches? Will the information ultimately be useful to decision makers?

Comments	Because of the number of elements or different components (7) of the study and the large number of investigators, the proposal is long and fairly complex. Nevertheless, based on the descriptions within each element of the study, the approach and methods appear for the most part well designed and will meet the objectives of that element (with the exception of Data Management which is only briefly described and hard to evaluate). It appears each type of measurement is feasible and most will likely be
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	<p>successful. However, the interconnectivity and linkages between the elements, tasks, and methods are hard to assess. It would be very helpful to see some flow charts or tables indicating succinctly what field observations and laboratory analyses were being done and show how these observations address the various questions being asked in the study. In addition, the same kind of flow chart or table indicating how various results will be integrated and combined to explain patterns and controlling processes is needed. Finally, more description of how modeling fits into all of this is needed. Most of this information is presently contained within the proposal, but it is hard to pull together (at least for me). Without some type of succinct integration, it is difficult to see how the linkages will be made between the very diverse sets of observations.</p>
Rating	good

Feasibility

Is the approach fully documented and technically feasible? What is the likelihood of success?
Is the scale of the project consistent with the objectives and within the grasp of authors?

Comments	<p>As explained previously, the approach is for the most part feasible and should be successful. The scale of the project should provide the temporal and spatial observations that are needed. The techniques and instruments being used are proven and the investigators are experienced with these types of studies (based on the proposal and the publications). However, there are components of the study where sources or fluxes of materials (organics, contaminants, etc.) will be assessed from concentrations, gradients, isotopes, etc. These types of observations are always difficult to make, but the approaches presented seems reasonable. In addition, the databases being generated will have</p>
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	significant value to add to the understanding of the ecosystem.
Rating	good

Monitoring

If applicable, is monitoring appropriately designed (pre–post comparisons; treatment–control comparisons)? Are there plans to interpret monitoring data or otherwise develop information?

Comments	Not applicable
Rating	not applicable

Products

Are products of value likely from the project? Are contributions to larger data management systems relevant and considered? Are interpretive (or interpretable) outcomes likely from the project?

Comments	The products that will be developed from this study (as indicated in the proposal) include: a hydrodynamic and transport model; a database; a hydrodynamic atlas; a final report; and publications in peer reviewed scientific journals. In addition, the PIs will participate in a CALFED sponsored workshop for managers and present the results at appropriate meetings. These products are useful and in line with a project of this type. However, the model aspect seems a little out of place as it received little discussion in the proposal. The model actually may be one of the important contributions within the project and needs more explanation in the proposal.
Rating	good

Additional Comments

Comments	None
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Technical Review #3

Capabilities

What is the track record of authors in terms of past performance? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Comments	There are a large number of investigators associated with this project and it is somewhat hard to determine each persons role (and show who has the overall responsibility for each element). It would have been useful to have a single table or flow chart indicating the PI responsible for each element and who would integrate the results. However, going over the information presented it appears the investigators are experienced and well qualified.
Rating	very good

Budget

Is the budget reasonable and adequate for the work proposed?

Comments	It is difficult to judge the budget for this study due to the manor in which each task is broken out (at least for me), but the total costs seem to be in line with the magnitude and length of the study.
Rating	not applicable

Overall

Provide a brief explanation of your summary rating.

Comments	The proposal for this project is long which makes evaluating some components difficult. Despite the length, some aspects need more explanation and/or flow charts and tables. For instance more information is needed on the integration of each component of the study, the development and use of the databases, and
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Technical Review #3

	<p>the development and use of the model. Probably less background in the discussion of each element of the study is needed and some additional information on the items listed above would be helpful. Nevertheless, I think the proposal addresses some very important fundamental scientific questions that will be very useful to understanding the ecosystem. In addition, the concept of looking at a number of components, as well as different spatial and temporal scales of this dynamic and heavily impacted system, is very important. It is probably necessary and (and now feasible) to approach ecosystem studies in this manor. In my view, this project will be very useful and helpful to managers and of interest to the scientific community - with the modifications and clarifications discussed in this review. More clarification would also likely improve the overall rating.</p>
Rating	good

